

What is claimed is:

1. A system for guiding an implantable medical device into a cardiac vein or coronary artery of a body, comprising:

5 an elongated shaft adapted to be positioned within the cardiac vein or coronary artery;

a fiber optic cable suitable for transmitting light, the cable being proximate to at least a distal portion of the elongated shaft;

an infrared light source to transfer infrared light down the cable;

10 an optical head assembly coupled to the cable to transmit to and receive from the body the infrared light;

a sensing device to sense the infrared light received from the body via the optical head assembly; and

15 a device coupled to the sensing device to generate from the received infrared light an image indicative of a position of at least the distal portion of the elongated shaft when the elongated shaft is positioned within the body.

2. The system of claim 1 wherein said elongated shaft includes a guide wire and lead or a guide catheter and lead.

3. The system of claim 1 wherein said light is visible light.

4. The system of claim 1 wherein said light includes infrared light.

25 5. The system of claim 1 wherein said sensing device includes a camera and video signal processing system.

6. A lead navigation, delivery and location system in tortuous vasculatures incorporated with a vision system to display the lead and the vascular environment thereof, the system comprising:

30 a guide wire and lead;

visible light or infrared light detection means incorporated in the vision system; and

a sensor at a distal end of said lead for transmission of visual images to a receiver in the vision system.

7. The system of claim 6 wherein the lead is operably integrated with a guide catheter.

8. The system of claim 6 wherein said sensor includes an APS sensor.

9. The system of claim 6 wherein said transmission from said sensor includes optical fibers.

10. The system of claim 9 wherein said optical fibers are of size to allow higher wavelength.

11. The system of claim 6 wherein a laser lead extraction system is incorporated with the vision system.

12. The system of claim 6 wherein an ablation system is incorporated with the vision system.

13. A method for guiding an implantable medical device (IMD) into a cardiac vein or coronary artery of a body, comprising:

positioning an elongated shaft within the body, the elongated shaft including a fiber optic cable suitable for transmitting light;

transmitting infrared light down the cable and into the body;

receiving reflected infrared light from the body via an optical head assembly positioned at a distal end of the elongated shaft;

generating an image indicative of a position of the distal end of the elongated shaft from the reflected infrared light; and

using the image to guide the IMD into a cardiac vein or coronary artery.

14. The method of claim 13 wherein the IMD is placed in a pulmonary vein ostia.

15. The method of claim 14 wherein the location of the IMD is verified via one of measuring and stimulating.

1. A method of implanting an implantable medical device (IMD) in a patient, the method comprising:
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